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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/210,485	12/11/1998	PAUL MANSKY	65304-039	5370

7590

12/05/2001

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EXAMINER

WACHSMAN, HAL D

ART UNIT

PAPER NUMBER

2857

DATE MAILED: 12/05/2001

Please find below and/or attached an Office communication concerning this application or proceeding.



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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
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EXAMINER
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ART UNIT	PAPER
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Commissioner of Patents and Trademarks

Hal D Wachsman  
Primary Examiner  
Art Unit: 2857

# Office Action Summary

Application No.

09/210,485

Applicant(s)

MANSKY ET AL.

Examiner

Hal D Wachsman

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 December 1998.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-112 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13-17, 20, 21, 23, 24, 26-32 and 34-112 is/are rejected.
- 7) ☒ Claim(s) 11, 12, 18, 19, 22, 25 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 1998 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2-4, 9-14, 19 6) ☐ Other: \_\_\_\_\_

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1. The drawings are objected to by the Draftsperson's for the reasons stated on the PTO-948 form. In addition, the Examiner objects to the drawings for the following reasons:

a) Labeling (i.e. in words) is needed in Figures 2A-2D, 6B, 9A-9C, 10, 13G, 16C, 16D, 17A, 17B, 18A-18C, 20A, 20B, 21A and 21B so as to facilitate an understanding of the invention from the drawings.

b) Both Figures 5 and 8 have text in the drawings and Figure 8 indicates at the bottom that this figure is confidential information and puts the company's name there.

c) Insufficient margin left at the top of Figures 12E and 13C has resulted in the punching of holes through subject matter of these figures.

Appropriate correction is required.

2. The section "RELATED CASES" on <sup>rev!</sup>page 1 of the specification has blank spaces which are missing the U.S. application serial numbers of several related cases and also needs to provide the current status of those applications. In addition, the citation of the attorney docket numbers for these cases are not necessary in a specification and should be deleted. Appropriate correction is required.

3. Page 78 of the specification refers to <sup>rev!</sup>U.S. application serial no. 09/133,171 but does not provide the current status of this application. Appropriate correction is required.

4. Claims 1-5 and 7-112 are objected to under 37 C.F.R. 1.75(a) for failing to particularly point out and distinctly claim the subject matter which the applicant regards

as the invention. Claim 1, line 5, cites the pronoun "its" however the use of a pronoun here adds ambiguity with respect to what exactly possesses the associated sample. This same type of problem also occurs in claim 2, line 5, claim 3, line 5, claim 4, line 5, claim 67, line 3, claim 71, line 3. Claim 4, line 10, cites "said at least one property" however is this referring to at least one material property ? Claim 4, line 11, cites "the materials library" which lacks antecedent basis. Claim 4, line 12, cites "group of sensor" which should be "group of sensors". Claim 4, line 16, cites "at least one material property" which it appears should be "said at least one material property". Claim 5, line 7, cites "a signal routing means" but a signal routing means for doing what exactly is being referred to here ? Claim 7, line 1, cites "the property" however is this referring to "the at least one material property" ? This same type of problem also occurs in claim 23, line 1, claim 26, line 1, claim 36, line 1, claim 42, line 1. Claim 9, line 3, cites "said substrate" which lacks antecedent basis in claim 5. This same type of problem also occurs in claim 11, line 3, claim 13, line 1, claim 16, line 1, claim 18, line 2, claim 20, line 1, claim 22, line 4, claim 24, line 2, claim 28, line 2, claim 31, line 2, claim 38, line 2, claim 39, line 3, claim 54, line 2, claim 55, line 2. Claim 10, line 2, cites "said sensors" but is this in fact referring to the "at least one sensor" already cited in claim 9 ? This same type of problem also occurs in claim 12, line 2. Claim 13, line 2, cites "a plurality of heater/thermometers" in which it appears that "heater" should be "heaters". This same type of problem also occurs in claim 16, line 3. Claim 15, line 1, cites "said heater/thermometer" however the antecedent basis is plural. This same type of problem also occurs in claim 17, line 1. Claim 16, line 3, cites "said material" however the

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antecedent basis is "poor thermal conducting material". Claim 25, line 2, cites "said sensor" which should be "said at least one sensor". Claim 28, lines 2-3, cite "said leads on said sensor" which lacks antecedent basis. Claim 28, line 3, cites "said material sample" which lacks clear antecedent basis. Claim 29, line 2, and claim 30, lines 1-2, cite "said materials library" which lacks antecedent basis in claims 1-4. Claim 30, lines 2-3, cite "said samples" however is this referring to "said 5 or more samples" ? This same type of problem also occurs in claim 34, line 2. A period is missing at the end of claim 35. Claim 39, line 4, cites "said sensor" which it appears should be "said at least one sensor". Claim 43, line 1, cites "the sensor" which lacks clear antecedent basis. This same type of problem also occurs in claim 44, line 1. Claim 44, line 3, cites "the sample" which lacks clear antecedent basis.

Claim 50, line 1, cites "said 5 or more sensors" which lacks antecedent basis in claims 5 and 6. Claim 56, line 1, cites "said plurality of sensors" which lacks clear antecedent basis in claims 1-4. Claim 67, line 3, cites "said standardized interconnection device" which lacks clear antecedent basis. This same type of problem also occurs in claim 69, line 3, claim 75, lines 1-2, claim 78, lines 1-2. In claim 70, line 2, it appears that the word "of" is missing between the words "consisting" and "conducting". Claim 82, line 2, cites "said electronic test circuitry" which lacks antecedent basis. This same type of problem also occurs in claim 95, line 2. Claim 84, line 3, cites "said electronic measurement channel" which should be "said one electronic measurement channel". This same type of problem also occurs in claim 97, line 3, claim 103, line 3. Claim 85, line 3, cites "said electronic measurement channels" however the antecedent

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basis is "two or more electronic channels". Claim 86, line 3, cites "said signal routing means" which lacks antecedent basis. Claim 86, lines 3-4, cites "said plurality of sensors" which it appears should be "said 5 or more sensors". Claim 93, line 3, cites "said electronic measurement channels" which lacks clear antecedent basis. Claim 98, lines 3-4, cite "each of said group of sensors" however in the antecedent basis there is only one group of two or more sensors selected. Claim 98, line 5, cites "said group" which should be "said group of two or more sensors". Claim 103, line 1, cites "said electronic platform" which lacks antecedent basis. This same type of problem also occurs in claim 104, line 1, claim 105, lines 1 and 4. Claim 104, line 3, cites "said electronic measurement channels" which lacks clear antecedent basis. Claim 107, line 2, cites "the 5 or more samples" which lacks antecedent basis in claims 5 and 6. Claim 108, lines 1-2 and 3, cite "said automated material dispensing device" however the antecedent basis is "automated material dispensing or deposition device". This same type of problem also occurs in claim 109, lines 1-2, claim 110, lines 1-2. The examiner asks the applicant to better claim the limitations cited above. While the examiner understands the intentions of the applicant he feels confusion could be drawn from the limitations cited above. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 1, 7-9, 13-17, 20, 21, 26-30, 34-38, 47-49, 55, 63-66, 81, 84-87, 90, 111 and 112 are rejected under 35 U.S.C. 102(a) or 102(e) as being anticipated by Lewis et al. (5,788,833).

As per claim 1, Lewis et al.'833 (Abstract, figure 1B, col. 2 lines 18-34, col. 17 lines 61-67, col. 18 lines 1-18) disclose the substrate as described in lines 3-5 of the claim. Lewis et al.'833 (Abstract, figure 1C, col. 2 lines 47-58, col. 8 lines 4-15) disclose the interconnection device as described in line 6 of the claim. Lewis et al.'833 (figure 1C, col. 8 lines 5-15, 53-61, col. 10 lines 15-62, col. 11 lines 61-67) disclose the electronic platform as described in the last 3 lines of the claim.

As per claim 7, Lewis et al.'833 (col. 9 lines 34-67, col. 10 lines 1-14) disclose the feature of this claim.

As per claim 8, Lewis et al.'833 (col. 9 lines 34-67, col. 10 lines 1-14, col. 19 lines 57-67, col. 20 lines 1-23) disclose at least one of the thermal properties from the group in the claim.

As per claim 9, Lewis et al.'833 (Abstract, col. 7 lines 43-65, col. 10 lines 1-6, col. 11 lines 19-28, 39-52, col. 13 lines 40-48, col. 14 lines 19-49, col. 20 lines 1-23) disclose the features of this claim.



As per claim 13, Lewis et al.'833 (col. 13 lines 7-10, col. 17 lines 10-25, col. 20 lines 4-23) disclose the features of this claim.

As per claim 14, Lewis et al.'833 (col. 17-table 4, col. 19 lines 58-60) disclose the feature of this claim.

As per claim 15, Lewis et al.'833 (col. 7 lines 43-65) disclose the feature of this claim.

As per claim 16, Lewis et al.'833 (col. 13 lines 7-10, col. 17 lines 10-25, col. 20 lines 4-23) disclose the features of this claim.

As per claim 17, Lewis et al.'833 (col. 7 lines 43-65) disclose the feature of this claim.

As per claim 20, Lewis et al.'833 (col. 7 lines 40-42, col. 9 lines 49-67, col. 19 lines 62-67, col. 20 lines 1-16) disclose the features of this claim.

As per claim 21, Lewis et al.'833 (col. 7 lines 40-42) disclose the feature of this claim.

As per claims 26 and 27, Lewis et al.'833 (col. 8 lines 52-61, col. 10 lines 15-22) disclose the features of each of these claims.

As per claims 28-30, Lewis et al.'833 (col. 7 lines 24-40, col. 8 lines 20-32, col. 9 lines 9-20) disclose the features of each of these claims.

As per claims 34 and 35, Lewis et al.'833 (col. 9 lines 49-67) disclose the features of each of these claims.

As per claim 36, Lewis et al.'833 (Abstract, col. 17 lines 25-31, col. 37 lines 29-53) disclose at least one of the members of the group in the claim.

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As per claim 37, Lewis et al.'833 (col. 1 lines 51-58) disclose at least one of the members of the group in the claim.

As per claim 38, Lewis et al.'833 (figure 1A-1) disclose the feature of this claim.

As per claims 47-49, Lewis et al.'833 (see at least abstract) disclose the features of each of these claims.

As per claim 55, Lewis et al.'833 (Abstract, figure 1B, 4A-1) disclose the features of this claim.

As per claims 63-66, Lewis et al.'833 (see at least abstract) disclose that the sensor array is constructed with at least two sensors, consequently there may be 2 or more sensors which would cover all the numbers of sensors recited in these claims.

As per claim 81, Lewis et al.'833 (col. 8 lines 4-15, 53-61) disclose the features of this claim.

As per claim 84, Lewis et al.'833 (col. 8 lines 4-15, 53-61) disclose the features of this claim.

As per claims 85-87, Lewis et al.'833 (col. 8 lines 5-19, 52-61) disclose the features of each of these claims.

As per claim 90, Lewis et al.'833 (col. 2 lines 4-8, col. 8 lines 11-15, 55, 56) disclose the features of this claim.

As per claim 111, Lewis et al.'833 (figure 1C, col. 9 lines 25, 49-59, col. 10 lines 1-14, col. 18 lines 47-50) disclose at least one of the members of the cited group.

As per claim 112, Lewis et al.'833 (col. 15 lines 3-10, col. 18 lines 50-56) disclose at least one of the members of this group.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 10, 31, 32 and 56-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al.(5,788,833).

As per claim 10, Lewis et al. as was already shown in claim 9, does disclose the microthin film membrane forming the sensors and the supporting substrate. With respect to the remaining features of this claim, it would have been obvious to a

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person of ordinary skill in the art at the time the invention was made that silicon wafers were notoriously well known in the art and that there were a variety of materials that the film membrane could be made of one of them being silicon nitride.

As per claims 31 and 32, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that magnets have a magnetic field and that in order to induce a current in the conductors in the sensor array on the substrate the lines of magnetic flux would need to cut the conductors or the conductors would need to cut the lines of magnetic flux perpendicular to each other.

As per claims 56-62, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that there would be a wide variety of geometric shapes available that could be used with respect to how the sensors are arranged in the sensor array.

9. Claims 2-10, 13-17, 20, 21, 26-32, 34-38, 47-49, 55-76, 78, 79, 87, 90-94, 97-100, 103-106, 111 and 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis (6,170,318).

As per claim 2, Lewis et al.'833 (Abstract, figure 1B, col. 2 lines 18-34, col. 17 lines 61-67, col. 18 lines 1-18) disclose the substrate as described in lines 3-4 of the claim. Lewis et al.'833 (figure 1C, col. 8 lines 5-15, 53-61, col. 10 lines 15-62, col. 11 lines 61-67) disclose the electronic platform as cited in the last 5 lines of the claim and the signal routing means with the exception of explicitly disclosing that a circuit board is being used to couple the signal routing means to the sensor array and that the circuit board is coupled to the sensor array. However, Lewis '318 (col. 12 lines 1-5, 65-67, col.

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13 lines 21-26) teaches these excepted features. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Lewis'318 to the invention of Lewis et al.'833 as specified above because as taught by Lewis'318 (col. 13 lines 23-26) the sensor density on the chip must be increased for hand-held type applications from that of box-type applications and this can be achieved using PCB technology.

As per claim 3, Lewis et al.'833 (Abstract, figure 1B, col. 2 lines 18-34, col. 17 lines 61-67, col. 18 lines 1-18) disclose the substrate as described in lines 3-5 of the claim. Lewis et al.'833 does not explicitly disclose the circuit board as described in lines 6-7 of the claim and the electronic platform as described in the last 5 lines of the claim. However, Lewis '318 (figures 5, 8A-1, col. 7 lines 2-11, col. 10 lines 45-54, col. 11 lines 7-21, 63-67, col. 12 lines 1-5, 65-67, col. 13 lines 21-26) disclose the circuit board and Lewis'318 (col. 11 lines 63-67, col. 12 lines 1-5, 38-49, 65-67) disclose the electronic platform. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Lewis'318 to the invention of Lewis et al.'833 as specified above because as taught by Lewis'318 (col. 13 lines 23-26) the sensor density on the chip must be increased for hand-held type applications from that of box-type applications and this can be achieved using PCB technology.

As per claim 4, Lewis et al.'833 (Abstract, figure 1B, col. 2 lines 18-34, col. 17 lines 61-67, col. 18 lines 1-18) disclose the substrate as described in lines 3-5 of the claim. Lewis et al.'833 (figure 1C, col. 8 lines 5-15, 53-61, col. 10 lines 15-62, col. 11 lines 61-67) disclose the remaining features of this claim with the exception of those

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features being placed on a circuit board. However, Lewis'318 (col. 11 lines 63-67, col. 12 lines 1-5, 65-67, col. 13 lines 21-26) teaches this excepted feature. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Lewis'318 to the invention of Lewis et al.'833 as specified above because as taught by Lewis'318 (col. 13 lines 23-26) the sensor density on the chip must be increased for hand-held type applications from that of box-type applications and this can be achieved using PCB technology.

As per claims 5 and 6, Lewis et al.'833 (figure 1C, col. 8 lines 5-15, 53-61, col. 10 lines 15-62, col. 11 lines 61-67) disclose all the features of each of these claims with the exception of all these features being placed on a circuit board. However, Lewis'318 (col. 11 lines 63-67, col. 12 lines 1-5, 65-67, col. 13 lines 21-26) teaches this excepted feature. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Lewis'318 to the invention of Lewis et al.'833 as specified above because as taught by Lewis'318 (col. 13 lines 23-26) the sensor density on the chip must be increased for hand-held type applications from that of box-type applications and this can be achieved using PCB technology.

As per claim 7, Lewis et al.'833 (col. 9 lines 34-67, col. 10 lines 1-14) disclose the feature of this claim.

As per claim 8, Lewis et al.'833 (col. 9 lines 34-67, col. 10 lines 1-14, col. 19 lines 57-67, col. 20 lines 1-23) disclose at least one of the thermal properties from the group in the claim.

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As per claim 9, Lewis et al.'833 (Abstract, col. 7 lines 43-65, col. 10 lines 1-6, col. 11 lines 19-28, 39-52, col. 13 lines 40-48, col. 14 lines 19-49, col. 20 lines 1-23) disclose the features of this claim.

As per claim 10, Lewis et al.'833 as was already shown in claim 9, does disclose the microthin film membrane forming the sensors and the supporting substrate. With respect to the remaining features of this claim, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that silicon wafers were notoriously well known in the art and that there were a variety of materials that the film membrane could be made of one of them being silicon nitride.

As per claim 13, Lewis et al.'833 (col. 13 lines 7-10, col. 17 lines 10-25, col. 20 lines 4-23) disclose the features of this claim.

As per claim 14, Lewis et al.'833 (col. 17-table 4, col. 19 lines 58-60) disclose the feature of this claim.

As per claim 15, Lewis et al.'833 (col. 7 lines 43-65) disclose the feature of this claim.

As per claim 16, Lewis et al.'833 (col. 13 lines 7-10, col. 17 lines 10-25, col. 20 lines 4-23) disclose the features of this claim.

As per claim 17, Lewis et al.'833 (col. 7 lines 43-65) disclose the feature of this claim.

As per claim 20, Lewis et al.'833 (col. 7 lines 40-42, col. 9 lines 49-67, col. 19 lines 62-67, col. 20 lines 1-16) disclose the features of this claim.

As per claim 21, Lewis et al.'833 (col. 7 lines 40-42) disclose the feature of this claim.

As per claims 26 and 27, Lewis et al.'833 (col. 8 lines 52-61, col. 10 lines 15-22) disclose the features of each of these claims.

As per claims 28-30, Lewis et al.'833 (col. 7 lines 24-40, col. 8 lines 20-32, col. 9 lines 9-20) disclose the features of each of these claims.

As per claims 31 and 32, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that magnets have a magnetic field and that in order to induce a current in the conductors in the sensor array on the substrate the lines of magnetic flux would need to cut the conductors or the conductors would need to cut the lines of magnetic flux perpendicular to each other.

As per claims 34 and 35, Lewis et al.'833 (col. 9 lines 49-67) disclose the features of each of these claims.

As per claim 36, Lewis et al.'833 (Abstract, col. 17 lines 25-31, col. 37 lines 29-53) disclose at least one of the members of the group in the claim.

As per claim 37, Lewis et al.'833 (col. 1 lines 51-58) disclose at least one of the members of the group in the claim.

As per claim 38, Lewis et al.'833 (figure 1A-1) disclose the feature of this claim.

As per claims 47-49, Lewis et al.'833 (see at least abstract) disclose the features of each of these claims.



As per claim 55, Lewis et al.'833 (Abstract, figure 1B, 4A-1) disclose the features of this claim.

As per claims 56-62, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that there would be a wide variety of geometric shapes available that could be used with respect to how the sensors are arranged in the sensor array.

As per claims 63-66, Lewis et al.'833 (see at least abstract) disclose that the sensor array is constructed with at least two sensors, consequently there may be 2 or more sensors which would cover all the numbers of sensors recited in these claims.

As per claims 67, 69, 71 and 73, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that contact pads were notoriously well known in the art and provide locations for wire bonding so that the sensors in the array can be electrically connected to conductor pins.

As per claims 68, 70, 72 and 74, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that there were a variety of connection means notoriously well known in the art such as soldering of electronic components, wire bonding, etc.

As per claim 75, Lewis et al.'833 (col. 8 lines 52-61) disclose the signal routing means and the second link as described in the last line of the claim. It appears that Lewis et al.'833 does not explicitly disclose the remaining features of this claim. However, Lewis'318 (col. 11 lines 63-67, col. 12 lines 1-5, 65-67, col. 13 lines 21-26) teaches these excepted features. It would have been obvious to a person of ordinary

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skill in the art at the time the invention was made to apply the techniques of Lewis'318 to the invention of Lewis et al.'833 as specified above because as taught by Lewis'318 (col. 13 lines 23-26) the sensor density on the chip must be increased for hand-held type applications from that of box-type applications and this can be achieved using PCB technology.

As per claims 76 and 79, Lewis et al.'833 (col. 10 lines 46-49) disclose the feature of this claim.

As per claim 78, Lewis'318 (col. 11 lines 63-67, col. 12 lines 1-5, 65-67, col. 13 lines 21-26) teaches the features of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Lewis'318 to the invention of Lewis et al.'833 as specified above because as taught by Lewis'318 (col. 13 lines 23-26) the sensor density on the chip must be increased for hand-held type applications from that of box-type applications and this can be achieved using PCB technology.

As per claim 87, Lewis et al.'833 (col. 8 lines 5-19, 52-61) disclose the features of each of these claims.

As per claim 90, Lewis et al.'833 (col. 2 lines 4-8, col. 8 lines 11-15, 55, 56) disclose the features of this claim.

As per claims 91-94, Lewis et al.'833 (col. 8 lines 5-19, 52-61) disclose the features of each of these claims.

As per claims 97 and 98, Lewis et al.'833 (col. 8 lines 5-19, 52-61) disclose the features of each of these claims.

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As per claim 99, Lewis et al.'833 (col. 2 lines 4-8, col. 8 lines 11-15, 55, 56) disclose the features of this claim.

As per claim 100, Lewis et al.'833 (col. 8 lines 5-19, 52-61) disclose the features of this claim.

As per claims 103-105, Lewis et al.'833 (col. 8 lines 5-19, 52-61) disclose the features of each of these claims.

As per claim 106, Lewis et al.'833 (col. 2 lines 4-8, col. 8 lines 11-15, 55, 56) disclose the features of this claim.

As per claim 111, Lewis et al.'833 (figure 1C, col. 9 lines 25, 49-59, col. 10 lines 1-14, col. 18 lines 47-50) disclose at least one of the variables of the cited group.

As per claim 112, Lewis et al.'833 (col. 15 lines 3-10, col. 18 lines 50-56) disclose at least one of the variables of the cited group.

10. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of "Dielectric Monitoring of Polymerization and Cure" (Kranbuehl).

As per claim 23, Kranbuehl (pages 303-305) teaches the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Kranbuehl to the invention of Lewis et al.'833 as specified above because as taught by Kranbuehl (page 303) frequency dependent dielectric measurements have become an effective instrumental means for monitoring a variety of polymer resin processing properties.

As per claim 24, Lewis et al.'833 (Figures 1A-1, 1B) disclose the feature of this claim.

11. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al.(5,788,833) in view of Lewis (6,170,318) as applied to claims 2, 3, 4, 5 or 6 above, and further in view of "Dielectric Monitoring of Polymerization and Cure" (Kranbuehl).

As per claim 23, Kranbuehl (pages 303-305) teaches the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Kranbuehl to the invention of Lewis et al.'833 and Lewis'318 as specified above because as taught by Kranbuehl (page 303) frequency dependent dielectric measurements have become an effective instrumental means for monitoring a variety of polymer resin processing properties.

As per claim 24, Lewis et al.'833 (Figures 1A-1, 1B) disclose the feature of this claim.

12. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Finlan (4,767,719).

As per claim 39, Finlan (see at least abstract) teaches the features of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Finlan to the invention of Lewis et al.'833 as specified above because as taught by Finlan (col. 2 lines 22-24) other piezoelectric materials may have an advantage if the device is to be fabricated by deposition on a substrate, for example by sputtering, CVD processes, etc.

As per claim 40, Finlan (Abstract, col. 1 lines 46-59) teaches at least the surface acoustic wave resonance mode. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Finlan to the invention of Lewis et al.'833 as specified above because as taught by Finlan (col. 2 lines 22-24) other piezoelectric materials may have an advantage if the device is to be fabricated by deposition on a substrate, for example by sputtering, CVD processes, etc.

As per claim 41, Finlan (see at least abstract) teaches the features of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Finlan to the invention of Lewis et al.'833 as specified above because as taught by Finlan (col. 2 lines 22-24) other piezoelectric materials may have an advantage if the device is to be fabricated by deposition on a substrate, for example by sputtering, CVD processes, etc.

13. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis (6,170,318) as applied to claim 36 above, and further in view of Finlan (4,767,719).

As per claim 39, Finlan (see at least abstract) teaches the features of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Finlan to the inventions of Lewis et al.'833 and Lewis'318 as specified above because as taught by Finlan (col. 2 lines 22-24) other piezoelectric materials may have an advantage if the device is to be fabricated by deposition on a substrate, for example by sputtering, CVD processes, etc.

As per claim 40, Finlan (Abstract, col. 1 lines 46-59) teaches at least the surface acoustic wave resonance mode. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Finlan to the inventions of Lewis et al.'833 and Lewis'318 as specified above because as taught by Finlan (col. 2 lines 22-24) other piezoelectric materials may have an advantage if the device is to be fabricated by deposition on a substrate, for example by sputtering, CVD processes, etc.

As per claim 41, Finlan (see at least abstract) teaches the features of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Finlan to the inventions of Lewis et al.'833 and Lewis'318 as specified above because as taught by Finlan (col. 2 lines 22-24) other piezoelectric materials may have an advantage if the device is to be fabricated by deposition on a substrate, for example by sputtering, CVD processes, etc.

14. Claims 42 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Naughton et al. (5,739,686).

As per claim 42, Naughton et al. (see at least abstract) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Naughton et al. to the invention of Lewis et al.'833 as specified above because as taught by Naughton et al. (col. 1 lines 9-15) the cantilever magnetometer can be used for measuring magnetic properties of a sample specimen and can be used in a wide range of magnetic fields and temperatures without any significant degradation in accuracy.

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As per claims 44 and 45, Naughton et al. (Abstract, col. 1 lines 50-61) teach the features of each of these claims. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Naughton et al. to the invention of Lewis et al.'833 as specified above because as taught by Naughton et al. (col. 1 lines 9-15) the cantilever magnetometer can be used for measuring magnetic properties of a sample specimen and can be used in a wide range of magnetic fields and temperatures without any significant degradation in accuracy.

As per claim 46, Naughton et al. (Abstract, col. 1 lines 50-61, col. 2 lines 39-43) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Naughton et al. to the invention of Lewis et al.'833 as specified above because as taught by Naughton et al. (col. 1 lines 9-15) the cantilever magnetometer can be used for measuring magnetic properties of a sample specimen and can be used in a wide range of magnetic fields and temperatures without any significant degradation in accuracy.

15. Claims 42 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis (6,170,318) as applied to claims 2, 3, 4, 5 or 6 above, and further in view of Naughton et al. (5,739,686).

As per claim 42, Naughton et al. (see at least abstract) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Naughton et al. to the inventions

of Lewis et al.'833 and Lewis'318 as specified above because as taught by Naughton et al. (col. 1 lines 9-15) the cantilever magnetometer can be used for measuring magnetic properties of a sample specimen and can be used in a wide range of magnetic fields and temperatures without any significant degradation in accuracy.

As per claims 44 and 45, Naughton et al. (Abstract, col. 1 lines 50-61) teach the features of each of these claims. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Naughton et al. to the inventions of Lewis et al.'833 and Lewis'318 as specified above because as taught by Naughton et al. (col. 1 lines 9-15) the cantilever magnetometer can be used for measuring magnetic properties of a sample specimen and can be used in a wide range of magnetic fields and temperatures without any significant degradation in accuracy.

As per claim 46, Naughton et al. (Abstract, col. 1 lines 50-61, col. 2 lines 39-43) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Naughton et al. to the inventions of Lewis et al.'833 and Lewis'318 as specified above because as taught by Naughton et al. (col. 1 lines 9-15) the cantilever magnetometer can be used for measuring magnetic properties of a sample specimen and can be used in a wide range of magnetic fields and temperatures without any significant degradation in accuracy.



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16. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Naughton et al. (5,739,686) as applied to claim 42 above, and further in view of Adelman et al. (6,037,167).

As per claim 43, Adelman et al. (Abstract, figures 2, 2A, 3) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Adelman et al. to the inventions of Lewis et al.'833 and Naughton et al. as specified above because as taught by Adelman et al. (Figure 1, col. 2 lines 11-16) the techniques of Adelman et al. can be used to analyze compounds that have been distributed on a substrate.

17. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis (6,170,318) and Naughton et al. (5,739,686) as applied to claim 42 above, and further in view of Adelman et al. (6,037,167).

As per claim 43, Adelman et al. (Abstract, figures 2, 2A, 3) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Adelman et al. to the inventions of Lewis et al.'833, Lewis'318 and Naughton et al. as specified above because as taught by Adelman et al. (Figure 1, col. 2 lines 11-16) the techniques of Adelman et al. can be used to analyze compounds that have been distributed on a substrate.

18. Claims 50-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis et al. (6,290,911).

As per claim 50, Lewis et al.'911 (see at least abstract) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Lewis et al.'911 to the invention of Lewis et al.'833 as specified above because as taught by Lewis et al.'911 (abstract) the detectable response of the sensors prepared by this method is not linearly related to the mole fraction of at least one of the polymer-based components of the sensors, thereby making arrays of these sensors useful for a variety of sensing tasks.

As per claims 51-54, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that there would be a multitude of possible sensor arrangements and pitch values that could be used in the design of the sensor array.

19. Claims 50-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis (6,170,318) as applied to claims 2, 3, 4, 5 or 6 above, and further in view of Lewis et al. (6,290,911).

As per claim 50, Lewis et al.'911 (see at least abstract) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Lewis et al.'911 to the inventions of Lewis et al.'833 and Lewis'318 as specified above because as taught by Lewis et al.'911 (abstract) the detectable response of the sensors prepared by this method is not linearly related to the mole fraction of at least one of the polymer-based components of the sensors, thereby making arrays of these sensors useful for a variety of sensing tasks.

As per claims 51-54, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that there would be a multitude of possible sensor arrangements and pitch values that could be used in the design of the sensor array.

20. Claims 77, 80, 89, 96 and 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis (6,170,318) as applied to claims 75, 78, 87, 93 and 100 above, and further in view of Allen et al. (6,111,520).

As per claims 77, 80, 89, 96 and 102, Allen et al. (see at least abstract) teach a means that can be used to make the wireless connections described in these claims. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Allen et al. to the inventions of Lewis et al.'833 and Lewis'318 as specified above because as taught by Allen et al. (abstract) the sensors are constructed so that either the resonant frequency or bandwidth of the sensor circuit, or both, are made to depend upon the physical properties such as pressure, temperature, presence of a chemical species, or other condition of a specific environment.

21. Claims 82 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Hollis et al. (5,653,939).

As per claims 82 and 88, Hollis et al. (col. 4 lines 26-35, col. 5 lines 5-9, col. 20 lines 33-36) teach the feature of each of these claims. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Hollis et al. to the invention of Lewis et al. as specified above

because as taught by Hollis et al. (col. 20 lines 33-36) switch matrices, analog testing circuits, and analog or digital (microprocessor) controllers could all be fabricated on the same wafer to perform or simplify the electrical tests.

22. Claims 83 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Allen et al. (6,111,520).

As per claims 83 and 89, Allen et al. (see at least abstract) teach a means that can be used to make the wireless connections described in these claims. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Allen et al. to the invention of Lewis et al.'833 as specified above because as taught by Allen et al. (abstract) the sensors are constructed so that either the resonant frequency or bandwidth of the sensor circuit, or both, are made to depend upon the physical properties such as pressure, temperature, presence of a chemical species, or other condition of a specific environment.

23. Claims 88, 95 and 101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis (6,170,318) as applied to claims 87, 93 and 100 above, and further in view of Hollis et al. (5,653,939).

As per claims 88, 95 and 101, Hollis et al. (col. 4 lines 26-35, col. 5 lines 5-9, col. 20 lines 33-36) teach the feature of each of these claims. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Hollis et al. to the inventions of Lewis et al.'833 and Lewis'318 as specified above because as taught by Hollis et al. (col. 20 lines 33-36) switch

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matrices, analog testing circuits, and analog or digital (microprocessor) controllers could all be fabricated on the same wafer to perform or simplify the electrical tests.

24. Claims 107 and 108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Zanzucchi et al. (5,755,942).

As per claims 107 and 108, Zanzucchi et al. (Abstract, col. 2 lines 33-39, 61-63) teach the features of each of these claims. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Zanzucchi et al. to the invention of Lewis et al.'833 as specified above because as taught by Zanzucchi et al. (col. 2 lines 49-50, 58, 59) each well in the array is designed so as to accomplish a selected task in appropriate modules on a substrate, and there would be a reduction in costs and an improvement in the speed of testing.

25. Claims 107 and 108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis (6,170,318) as applied to claims 2, 3, 4, 5 or 6 above, and further in view of Zanzucchi et al. (5,755,942).

As per claims 107 and 108, Zanzucchi et al. (Abstract, col. 2 lines 33-39, 61-63) teach the features of each of these claims. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Zanzucchi et al. to the inventions of Lewis et al.'833 and Lewis'318 as specified above because as taught by Zanzucchi et al. (col. 2 lines 49-50, 58, 59) each well in the array is designed so as to accomplish a selected task in appropriate modules on a substrate, and there would be a reduction in costs and an improvement in the speed of testing.

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26. Claims 109 and 110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Zanzucchi et al. (5,755,942) as applied to claims 107 and 108 above, and further in view of Wu et al. (6,045,671).

As per claim 109, Wu et al. (see at least abstract) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Wu et al. to the inventions of Lewis et al.'833 and Zanzucchi et al. as specified above because as taught by Wu et al. (col. 3 lines 19-27) developing new materials often requires combinatorial deposition of thin-films onto substrates wherein the precise chemical composition, concentrations, stoichiometries and thickness of the deposited films is known. To this end, it would be beneficial to construct apparatus and methodology to produce arrays of materials with slightly varying composition, concentrations, stoichiometries and thickness on known locations on a substrate so that the materials can be readily synthesized and analyzed.

As per claim 110, Wu et al. (col. 5 lines 9-19) teach at least one of the methods in the cited group. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Wu et al. to the inventions of Lewis et al.'833 and Zanzucchi et al. as specified above because as taught by Wu et al. (col. 3 lines 19-27) developing new materials often requires combinatorial deposition of thin-films onto substrates wherein the precise chemical composition, concentrations, stoichiometries and thickness of the deposited films is known. To this end, it would be beneficial to construct apparatus and methodology to produce arrays of materials with slightly varying composition, concentrations,

stoichiometries and thickness on known locations on a substrate so that the materials can be readily synthesized and analyzed.

27. Claims 109 and 110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (5,788,833) in view of Lewis (6,170,318) and Zanzucchi et al. (5,755,942) as applied to claims 107 and 108 above, and further in view of Wu et al. (6,045,671).

As per claim 109, Wu et al. (see at least abstract) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Wu et al. to the inventions of Lewis et al.'833, Lewis'318 and Zanzucchi et al. as specified above because as taught by Wu et al. (col. 3 lines 19-27) developing new materials often requires combinatorial deposition of thin-films onto substrates wherein the precise chemical composition, concentrations, stoichiometries and thickness of the deposited films is known. To this end, it would be beneficial to construct apparatus and methodology to produce arrays of materials with slightly varying composition, concentrations, stoichiometries and thickness on known locations on a substrate so that the materials can be readily synthesized and analyzed.

As per claim 110, Wu et al. (col. 5 lines 9-19) teach at least one of the methods in the cited group. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Wu et al. to the inventions of Lewis et al.'833, Lewis'318 and Zanzucchi et al. as specified above because as taught by Wu et al. (col. 3 lines 19-27) developing new materials often requires combinatorial deposition of thin-films onto substrates wherein the precise

chemical composition, concentrations, stoichiometries and thickness of the deposited films is known. To this end, it would be beneficial to construct apparatus and methodology to produce arrays of materials with slightly varying composition, concentrations, stoichiometries and thickness on known locations on a substrate so that the materials can be readily synthesized and analyzed.

28. Claims 11, 12, 18, 19, 22, 25 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and subject to the appropriate correction of the 37 C.F.R. 1.75(a) objections noted above.

29. The following references are cited as being art of general interest: Glaunsinger et al. which disclose a chemical switch for detection of chemical compounds, Buehler which discloses a gas sensor test chip and Britton, Jr. et al. which disclose the use of a cantilever element in chemical detection.

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal D Wachsman whose telephone number is 703-305-9788. The examiner can normally be reached on Monday to Friday 7:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 703-308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Hal D. Wachsman*  
Hal D Wachsman  
Primary Examiner  
Art Unit 2857

HW  
November 26, 2001